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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,189

07/14/2006

Young-Gyu Rho

P58081

4884

8439

7590

11/29/2010

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EXAMINER

SAVANI, AVINASH A

ART UNIT

PAPER NUMBER

3749

NOTIFICATION DATE

DELIVERY MODE

11/29/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/586,189	Applicant(s) RHO, YOUNG-GYU	
	Examiner AVINASH SAVANI	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. The following action is in response to the applicant's Amendment dated 9/3/2010, that was in response to the Office action dated 3/3/2010. Claims 1-10 are pending, claims 2 and 3 have been amended, while claims 1 and 4-10 are presented as previously claimed.

Response to Arguments

2. Applicant's arguments regarding claims 1 filed 9/3/2010 have been fully considered but they are not persuasive. The reasons for the applicant's remarks not being persuasive are given below. As an initial matter, in light of the applicant's remarks/amendments regarding the 35 USC 112, 2nd rejections of claims 1-3, these rejections will be withdrawn.

3. The applicant respectfully submits that Wasson fails to disclose an O-ring, and that the shape of the valve case is not a matter of design. The examiner respectfully disagrees with these comments. First the O-ring of Wasson is seen to be element (30), and although referred to as a valve, the functionality is the same as that of which is claimed. The reasoning for the design choice is further clarified in that the orientation of the valve is different, i.e. a horizontal versus a vertical orientation. Nonetheless, there is a change in distance from a portion of the opening to the interior as can be seen with the curvature of the casing, and if oriented vertically, Wasson would show a similar limitation as claimed. Wasson does not show a triangular cross section as is seen in the

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applicant's figure 1. For these reasons, the applicant's remarks regarding claim 1 are not persuasive, and the previous ground of rejection will be maintained.

4. Regarding claims 3-10, applicant's arguments with respect to claims 2-10 have been considered but are moot in view of the new ground(s) of rejection. It is inherent that a supply pipe would be present because the two structures are enclosures, and for a flow of fluid to occur, there would be a supply pipe, which can also be seen in phantom in figure 1.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wasson [2784913].

4. With respect to claim 1, Wasson discloses a gas control valve comprising: a hollow valve case (1) including a gas intake port (6) formed at the upper side thereof, a

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gas discharge port (32) formed at the side thereof [see FIG 1]; a valve piston (35) with which an O-ring for sealing the space between the valve case and the valve piston is coupled [col 3, line 43-46]; a compression spring (33) inserted into the space between the valve piston and the protruded intermediate side to apply a force to push the valve piston; and a heat exchanger (36), installed on the bottom of the valve case, for increasing vapor pressure to apply a force to the valve piston to be pushed upward such that the gas control valve automatically adjusts the quantity of gas in response to the heat transferred to the heat exchanger [col 3, line 66-75, col 4, line 1-34]. Wasson does not disclose an upper inclined end having a narrow upper side and a wide lower side, and a protruded intermediate side or a valve piston that is inserted into the valve case to move upward and downward or the force pushing down. These features are believed to be a matter of design choice since no advantage is given. Therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention to provide a valve arranged as claimed because it would be within their knowledge of the possible designs to facilitate a working valve, showing a matter of design rather than criticality.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wasson ['913], further in view of Dietrich [5092743].

6. With respect to claim 2, Wasson discloses a gas blocking valve comprising: a hollow valve case (1) including a gas discharge port (32) formed at the side thereof, a gas intake port (6) a valve piston (35), inserted into the valve case, with which an O-ring for sealing the space between the valve case and the valve piston is coupled [col 3, line 43-46]; a compression spring (33) inserted into the space between the valve piston

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and the protruded intermediate side to apply a force to push the valve piston down; and a heat exchanger (36), installed on the bottom of the valve case, for increasing vapor pressure to apply a force to the valve piston to be pushed upward such that the gas blocking valve automatically blocks gas in response to the heat transferred to the heat exchanger [col 3, line 66-75. col 4, line 1-34], however does not disclose the intake formed below the gas discharge port, and a protruded intermediate side or a piston to move upward and downward. These features are believed to be a matter of design choice since no advantage is given. Therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention to provide a valve arranged as claimed because it would be within their knowledge of the possible designs to facilitate a working valve, showing a matter of design rather than criticality. Wasson also does not disclose that the valve piston is in immediate contact with liquid. Dietrich shows a similar device, wherein a valve piston is disposed in immediate contact with a space including a liquid and if used to modify Wasson would show a vapor transformed from the liquid within the space due to the heat exchanger [see FIG 1, col 3, line 29-56]. It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the valve of Wasson with the liquid feature of Dietrich because the arrangement was known, yielding the predictable result of changing the vapor pressure within the casing in order to regulate the valve.

7. Claims 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iritani [5839655], in view of Wasson ['913], further in view of Strasser [3282256].

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8. With respect to claim 3, Iritani discloses an automatic warm water circulator using gas valves, comprising: a circulation cycle formed such that a reservoir (1) is connected to a boiler (6) by a supply pipe, the boiler is connected to a heat exchanger (2) by a discharge pipe, and the reservoir is connected to the heat exchanger by a circulation pipe (3, 4) [see FIG 1]; a hollow combustion chamber (7) provided in the lower side of the boiler; however does not disclose the gas supply or the valves as claimed. The ignition device for burning the gas to heat the water in the boiler is an inherently present element since a combustion chamber is provided and ignition devices are notoriously known to be paired with any combustion device. Wasson teaches a similar device a gas supply for supplying the gas to the inside of the combustion chamber; and a supply valve and a discharge valve respectively provided in the supply pipe and the discharge pipe and automatically opened and closed in response to the inner pressure of the boiler [see FIG 1, col 3, line 66-75. col 4, line 1-34]. In view of Wasson, there is a gas supply device and valves as claimed. It would have been obvious to a person of ordinary skill in the art at the time of the invention to control the gas via the valves regarding the inner pressure of the boiler because the technique was known in the art, yielding the predictable result of providing a temperature of the water to be supplied that does not exceed unsafe levels. Iritani does not show the combustion chamber having sides protrude from the exterior of the boiler. Strasser teaches a similar system wherein the sides of the combustion chamber (3) protrude from the exterior of the boiler [see FIG 1]. It would have been obvious to a person of ordinary skill in the art at the time of the invention to arrange the combustion chamber as claimed because the technique

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was known in the art, yielding the predictable result of proper water temperature maintenance.

9. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iritani ['655], in view of Wasson ['913], in view of Strasser ['256], further in view of Sebastiani [5937796]

10. With respect to claim 4, Iritani discloses the automatic warm water circulator using gas valves as set forth in claim 3, however does not disclose the gas supply or ignition device as further claimed.

11. With respect to claim 5, Iritani discloses the automatic warm water circulator using gas valves as set forth in claim 4, however does not disclose the gas blocking valve as further claimed.

12. With respect to claim 6, Iritani discloses the automatic warm water circulator using gas valves as set forth in claim 3, however does not disclose the combustion chamber as further claimed.

13. With respect to claim 7, Iritani discloses the automatic warm water circulator using gas valves as set forth in claim 4, however does not disclose the pilot igniter as further claimed.

14. With regards to claims 4-7, Iritani discloses the automatic warm water circulator however, Sebastiani teaches a combustion chamber wherein the gas supply and ignition device comprises: a main nozzle (34) provided in the combustion chamber and connected to a gas container by a main gas pipe (37) to eject the supplied gas; a pilot igniter (25) for igniting the gas ejected from the main nozzle; and a gas control valve

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(40), provided in the main gas pipe, for automatically controlling the quantity of the gas to be supplied to the main nozzle according to the temperature of the boiler [see FIG 2, col 5, line 7-20]. Wasson teaches a gas blocking valve, installed in the main gas pipe to be connected to the gas control valve in serial, for automatically blocking the gas to be supplied to the main nozzle according to the temperature of the boiler [col 3, line 66-75. col 4, line 1-34]. Sebastiani further teaches the combustion chamber includes: protruded ends formed in the upper outer circumference thereof; and air intake ports (50), coupled with both end of the combustion chamber, through which air necessary for combustion of the gas is introduced [see FIG 3, col 4, line 49-65] and the pilot igniter comprises: a pilot nozzle connected to a pilot supply pipe branched from the main gas pipe and installed near to the main nozzle, and including a pilot lighter connected to a pilot switch such that the pilot nozzle ignites the gas ejected from the main nozzle while the pilot nozzle flames [col 5, line 46-62]. In view of Sebastiani, the combustion chamber of a boiler has a gas supply nozzle as claimed along with an ignition device and air intake slots as further claimed. It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide a boiler with the combustion chamber and components as claimed because the option was known in the art, yielding the predictable result of having a warm water system that is highly precise in the temperature output.

15. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iritani ['655], in view of Wasson ['913], Strasser ['256], further in view of Kirk [2695753].

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16. With respect to claim 8, Iritani discloses the automatic warm water circulator using gas valves as set forth in claim 3, however does not disclose the reservoir as further claimed.

17. With respect to claim 9, Iritani discloses the automatic warm water circulator using gas valves as set forth in claim 8, however does not disclose the air pack as further claimed.

18. With respect to claim 10, Iritani discloses the automatic warm water circulator using gas valves as set forth in claim 8, however does not disclose the air pack.

19. With regard to claims 8-10, Iritani discloses the automatic warm water circulator, however Kirk teaches a similar device wherein the reservoir comprises: an opening for opening a part of the upper side of the reservoir; an opening and closing device provided at the opening and having a ventilation hole; and an air pack, installed in the opening and closing device, for sealing the opening and being contracted and expanded due to the pressure difference between the inner pressure of the reservoir and an external pressure by the opening [see FIGs 3 and 4, col 2, line 24-38], wherein the air pack is provided in the upper or lower surface of the opening and closing device [see FIG 1], and wherein the air pack accommodates water [col 1, line 44-75]. In view of Kirk, the water reservoir is arranged to react to differing pressure. It would have been obvious to a person of ordinary skill in the art at the time of the invention to have a water reservoir as claimed because the contract and expanding capabilities of the water reservoir were known to allow for greater control of water flow, yielding the predictable result of providing a water supply based on demand.

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AVINASH SAVANI whose telephone number is (571)270-3762. The examiner can normally be reached on Monday- Friday, alternate Fridays off, 7:30-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Avinash Savani/
Examiner, Art Unit 3749

/Carl D. Price/
Primary Examiner, Art Unit 3749

/A. S./
11/17/2010